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CASE REPORT- STUDY ON ULTRASOUND GUIDED FINE NEEDLE ASPIRATION CYTOLOGY OF LIVER LESIONS.

Pathology

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KEYWORDS

Introduction:

Early diagnosis leads to successful treatment and good prognosis. The objective of all the diagnostic modalities is to make the diagnosis within a short period of time using minimum tests, money and discomfort to the patients. Fine needle aspiration cytology is one such procedure which requires no anaesthesia and is quick and easy to perform. Also, it causes least discomfort to the patients (1). On radiography, inflammatory lesions or diffuse liver lesions mimic mass like lesions, such lesion can be sampled by FNA to rule out neoplasm from the differential diagnosis (2). However, there is poor lesion localization and lower diagnostic accuracy with blind aspiration which has led to the usage of various radiologic guidance procedures. The advent of ultrasonogarphy (US) have enhanced the guidance for FNAC (3).

Ultrasound guided FNAC is a quick, simple and complication free procedure for diagnosing liver lesions (4).

The present study has been conducted to evaluate the efficacy of ultrasound guided FNAC in the diagnosis of liver lesions and to assess the feasibility of using this technique as a routine diagnostic procedure for liver lesions.

Materials and method:

A total number of 60 cases were studied from November 2013 to October 2015. Study is performed on outdoor and indoor patients of RNT Medical College and Maharana Bhupal Hospital, Udaipur in whom hepatic mass is confirmed by radiological examination. The detailed clinical and radiological data of the patient was collected and after taking the consent patient was subjected to FNAC under Ultrasound as per procedure detailed by Martin and Ellis (5).

The area was sterilized with spirit. A 22-23 gauze disposable needle of 15-20mm length was fixed on the 10 ml disposable syringe. Under the ultrasound guidance the needle was introduced without any negative pressure in the syringe and was checked over the screen before aspirating. When the needle tip had entered the target area, the plunger was retracted, thus creating a low vacuum in the syringe and needle lumen. While the vacuum was maintained, the needle was moved back and forth at varied angles in order to obtain adequate cellular samples. The plunger was then released to eliminate the vacuum in order to reach pressure equilibrium in the system. The needle was withdrawn from the lesion and it was detached from the syringe. The plunger was slightly retracted to allow air inside the syringe. The needle contents were blown out on the glass slides by pushing the plunger, with the needle tip in touch with the glass slide. The aspirate was smeared with another slide by exerting slight pressure.

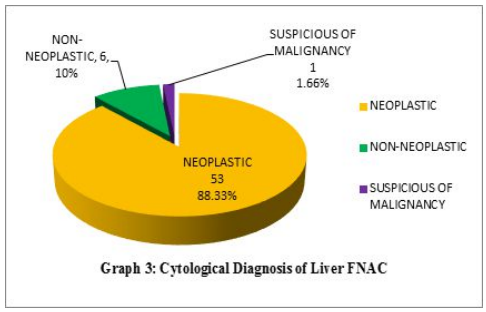
Five or six smears were prepared. The smears were then air dried. These air dried smears were stained by May-Grunwald-Giemsa stain.

Results:

The age of the patients ranged from 28 years to 90 years with a mean age of 57.28 years. The majority were male patients in 5th decade. Males accounted for 43 cases (72%) and females 17 cases (28%) with a male to female ratio of 2.5:1.

Out of sixty cases 41 (68.33%) cases were alcoholic, out of which seventeen (41.46%) cases were of hepatocellular carcinoma and fifteen (36.58%) cases were diagnosed as metastatic lesion. Forty four cases were chronic smokers, out of them eighteen (40.90%) cases were of metastatic lesion and hepatocellular carcinoma was diagnosed in fifteen (34.09%) cases.

In the present study, the liver lesions were divided into non-neoplastic and neoplastic lesions. Out of sixty patients, neoplastic lesions - in fifty three cases (88.83%) were more common than the non-neoplastic lesions - in six cases (10.16%). One case was inconclusive (1.66%) which was suspicious of carcinoma.



Graph 3: Cytological Diagnosis of Liver FNAC

Table 1: FNAC diagnosis in 60 patients

Diagnosis	No. of Cases	Percentage
Non-neoplastic lesions	6	10%
Pyogenic liver abscess	5	8.33%
Granulomatous hepatitis	1	1.66%
Neoplastic lesions	53	88.33%
Hepatocellular carcinoma	21	35%
Metastatic adenocarcinoma	21	35%
Metastatic poorly differentiated carcinoma	6	10%
Unclassified malignancy	5	8.33%
Suspicious of malignancy	1	1.66%
Total	60	100%

The present study encountered six (10%) non-neoplastic lesions out of sixty cases.

Out of which 5 were diagnosed as pyogenic liver abscess 5 (83%) and a single case of granulomatous hepatitis (7%).

Malignant lesions of the liver constituted fifty three cases (89.33%) out of the sixty aspirates. Primary and metastatic malignancies constituted twenty one (39.62%) and twenty seven (50.94%) cases respectively and unclassified malignancy in five cases (9.43%).

Table 2: Cytological Diagnosis of Neoplastic Liver Lesion

Diagnosis	No. of cases	Percentage
Hepatocellular carcinoma	21	39.62%

Well differentiated	8	39.62%
Moderately differentiated	5	39.62%
Poorly differentiated	8	39.62%
Metastatic adenocarcinoma	21	39.62%
Metastatic poorly differentiated carcinoma	6	11.32%
Unclassified malignancy	5	9.43%
total	53	100%

Out of these twenty one cases of HCC seventeen were males (80.95%) and four were females (19%) with a male to female ratio of 4.2:1. Most of the patients were in 5th decade of life. The age of the patient ranged from 31 to 90 years with a mean age of 59.71 years.

Table-3: Cytological features of HCC

Cytological features	HCC (n=21) (%)
Hypercellularity	18 (85.71%)
Trabecular pattern	14 (66.66%)
Transgressing endothelium	12 (57.14%)
Bile	14 (66.66%)
Intracytoplasmic inclusion	10 (47.6%)
Pleomorphism	19 (90.47%)
Increased N:C ratio	19 (90.47%)
Increased chromatin density	7 (33.33%)
Large nucleoli	13 (61.90%)
Naked nuclei	16 (76.19%)

Table 3 shows the various nuclear and cytological features on the basis of which HCC was divided into well, moderately or poorly differentiated.

Twenty one cases of metastatic adenocarcinoma were diagnosed in our study with thirteen males and eight females with a male to female ratio of 1.6:1. The age ranged from 42 to 80 years with a mean age of 55.42 years. The site of primary was colorectal in five patients, followed by breast, cervix and gall bladder in two patients each and One case each with primary in ovary, pancreas and stomach. However, in seven patients, the primary tumor was not established

Also, there were six cases of metastatic poorly differentiated carcinoma (PDC) in our study. One case was suspicious of malignancy as smear showed well differentiated hepatocytes and absence of tumor diathesis; it was difficult to differentiate into Hepatocellular adenoma or HCC.

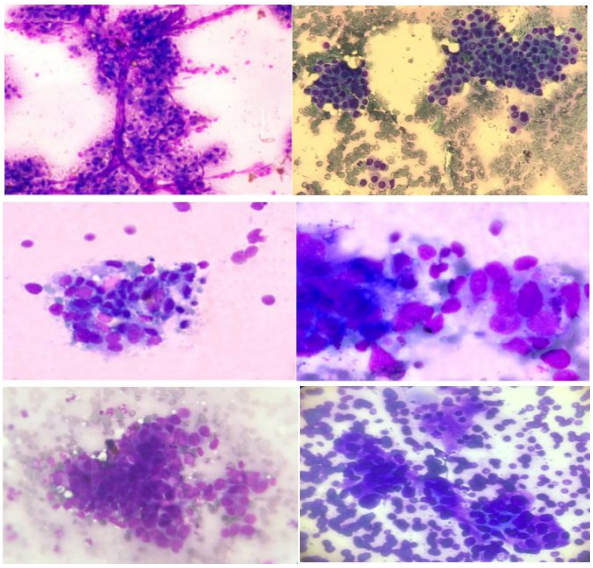


Fig. 1 Well differentiated Hepatocellular carcinoma, transversing blood vessels with well differentiated tumor cells.MGG (200x) Fig. 2 Moderately differentiated Hepatocellular carcinoma showing intranuclear cytoplasmic inclusion MGG (200x) Fig. 3,4 Poorly differentiated Hepatocellular carcinoma showing high N/C ratio with large hyperchromatic nuclei MGG (200x) Fig. 5 Metastatic adenocarcinoma MGG (400x)

Fig. 6 Metastatic poorly differentiated carcinoma MGG (400x)

Correlation of ultrasound findings with guided ultrasound FNAC findings Ultrasonographic findings of liver were correlated with cytological findings.

- Five cases of solitary lesions described by ultrasonography as abscess were proved as such in cytology in 100% cases.
- A single case of diffuse parenchymal lesion diagnosed as granulomatous hepatitis.
- In nineteen cases multiple lesions described by ultrasonography and suggested differential diagnosis of metastasis and HCC proved to be metastatic in ten cases (52.63%) and HCC in nine cases (47.36%) on cytological examination.
- Fifteen cases of multiple lesions suggested as metastatic lesions by ultrasonography were proved same in cytology in 100% cases.
- Ten cases of solitary lesions suggested as HCC by ultrasonography proved to be HCC by cytological examination in 100% cases.
- Nine cases of solitary lesion suggested as neoplastic in ultrasonography were proved by cytological examination as five cases of unclassified malignancy, two cases of metastasis and two cases of HCC.

Discussion:

Ultrasound guided FNAC is a very useful procedure for the diagnosis of various hepatic lesions. It offers accuracy without major complication and intervention at low cost. The only absolute contraindications are marked bleeding disorders and suspected vascular lesion.

The age of the patients ranged from 28 to 90 years with a mean age of 57.28 years. The study revealed a male preponderance (43 cases) against only 17 patients being females. Male to Female ratio was 2.5:1 which was correlating with the other studies conducted by Balani et al (6), Roy et al (7), Rasania et al (8), Swamy et al (9), Franca et al (10) and Gatphoh et al (11).

In our study there were six cases (10%) of non neoplastic lesions, fifty three cases (89.33%) of neoplastic lesion and one case (1.66%) which was suspicious of malignancy. Other Indian studies also showed high proportion of malignant lesions (6,7,8).

In present study, five cases of pyogenic liver abscesses were seen. There was one case diagnosed as granulomatous hepatitis in the present study (1.69 %). Roy et al(7), Rasania et al (8), Kuo et al(12) and Swamy (9) reported 1, 2, 3, 3 cases respectively of granulomatous hepatitis by FNAC. We encountered fifty three (88.13%) malignant lesions out of sixty cases, twenty one cases (35%) had primary tumor, twenty seven cases (45%) with metastatic tumors and five cases (8.33%) of unclassified malignancy. Balani et al (6) diagnosed fifty cases with malignant lesion out of fifty two cases. Out of these fifty cases only fifteen cases were of HCC, four cases were of cholangiocarcinoma, hepatoblastoma was diagnosed in two cases and twenty nine cases were of metastatic lesion. However, Roy et al (7), Rasania et al (8), Kuo et al (12) and Swamy (9) observed similar findings to our study in their respective studies. They observed that incidence of HCC was almost equal to that of metastatic lesions.

In our study metastatic lesions constituted twenty seven (50.94%) of all hepatic malignancies and colon was the most common site of primary. However, Rasania et al (8) observed a lower incidence (41.92%) of metastatic lesion in her study as compared to occurrence of HCC.

Conclusion:

Ultrasound guided fine needle aspiration cytology of liver is a safe, simple and cost method for cytological diagnosis of hepatic lesions either diffuse, focal or cystic with good diagnostic accuracy. In our study it was helpful in distinguishing non-neoplastic lesions from neoplastic lesion and further more malignant lesions were also categorized into primary and metastatic tumors. It can be used as an add on technique to ultrasonography for diagnosis and classification of liver diseases.

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